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EXTINCT BISON OF MANITOBA



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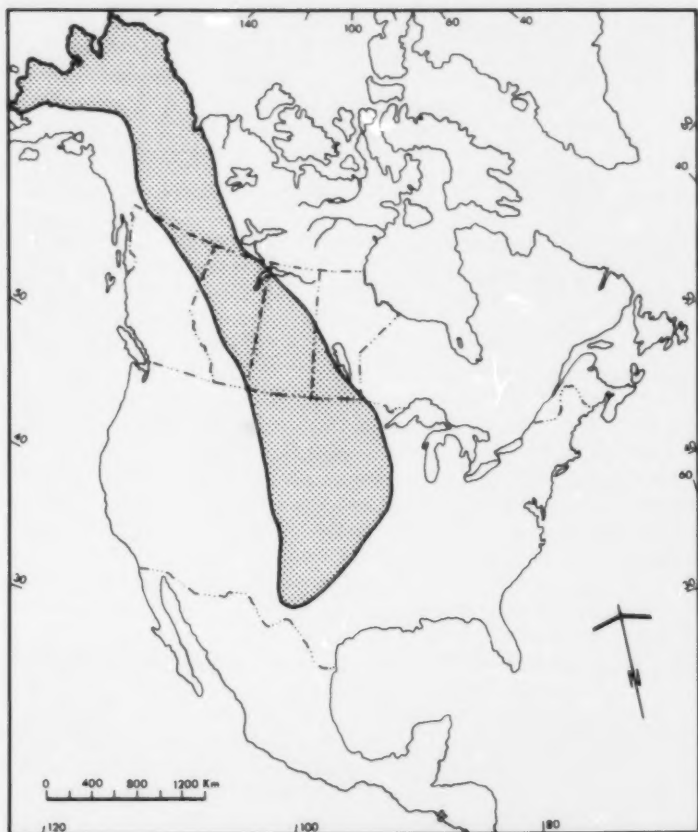
EXTINCT BISON

OF MANITOBA

Introduction

Prior to 1880, the North American bison played a more important role in sustaining southern Manitobans than any other single animal species. So numerous were these animals, and so central were they as sources of food and as raw materials for the manufacture of clothing and shelter, that they have justly earned their position as the dominant figure on our provincial coat of arms. But the bison of today is a surprisingly modern variety that appeared only a few thousand years before the time of Christ. In the thousands of years between the close of the last Ice Age and the appearance of the living form, Native Manitobans relied upon ancestral, now-extinct varieties. Known technically as *Bison antiquus antiquus* ("ancient bison") and *Bison antiquus occidentalis* ("bison of the west"), these differed mainly from the modern bison in that they were larger and had longer horns. Adult males could weigh as much as 1360 kilograms and the distance from one horn tip to another could approach two meters—a formidable prey indeed for a lone hunter armed only with a spear.

The remains of *Bison antiquus antiquus* have been found over much of North America, and in fact this variant was the most widespread of all the North American bison. Between 125,000 and 7500 BC, *Bison antiquus antiquus* probably experienced its greatest population size and density. It was during this time that savannas and grasslands were very widespread. During the last ("Wisconsinan") glacial period *Bison antiquus antiquus* ranged primarily over the southwestern quarter of the continent, but the range expanded and then shifted northward as the glacial ice gradually disappeared. In all likelihood, *Bison antiquus antiquus* was primarily a grazer that occupied savanna or partially wooded grassland environments.

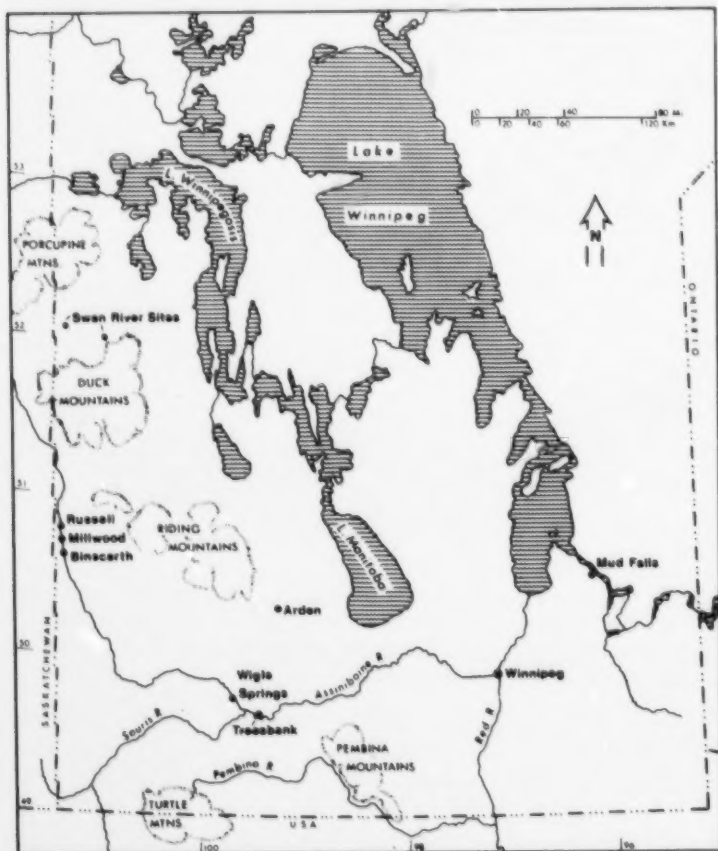


"Probable range" of the extinct *Bison antiquus occidentalis* ("bison of the west") as proposed by Skinner and Kaisen in 1947. Note the distribution for Manitoba—recent findings have borne out this projected distribution for the province.

As the climate grew warmer and drier toward the close of the Wisconsin glacial period, evolutionary changes took place within certain populations of *Bison antiquus antiquus*. Around 9000 BC, these changes were giving rise on the western Great Plains to a somewhat smaller form, *Bison antiquus occidentalis*. From its place of origin in the mid-latitude grasslands, *occidentalis* spread outward to the north and the east as the grasslands expanded. Included within this northward expansion was southwestern Manitoba. By 2000 BC, *occidentalis* had been replaced by its modern descendant, *Bison bison bison*.

The Fossil Record

The distinctive remains of *Bison antiquus antiquus* and *Bison antiquus occidentalis* have been found in various parts of the province, but the Assiniboine River Valley has proven the most productive source of fossil bison bones to date. Such evidence has been found near Millwood, Russell, Binscarth, Wigle Springs, and Treesbank, and within the city limits of Winnipeg. Chemical and radioactive analyses of the bone show that they date between 7000 and 4000 BC. The Swan River Valley has also produced several finds, the oldest dating back to just over 8000 BC. Near Arden, a skull was found 10 meters below the surface of a beach of the ancient glacial Lake Agassiz, thus suggesting considerable antiquity. Further east, the nearly complete



Locations of the fossil bison localities referred to in the text.

skeleton of one of the now-extinct forms of bison was found in a bog near Kenora. Its date of 2800 BC is one of the most recent and probably fairly closely approximates the date of the final demise of these animals.

Occasionally, tools and weapons are found with the bones which show that both people and now-extinct animals occupied the province at the same time. The discovery of ancient stone spear points embedded in bone or between the vertebrae provide conclusive evidence that these bison were hunted by early Native people. From the banks of the Winnipeg River near Mud Falls, a large bison skull was recovered along with tools made from beaten copper, and just to the south near Great Falls, bison remains and spear points were found at what must have been a kill site that was first occupied around 8000 years ago.

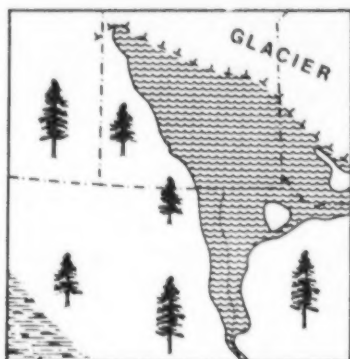


Front (top) and rear views of a *Bison antiquus antiquus* skull from the bank of the Assiniboine River near Millwood. The distance between the tips of the horn cores is 87.5 cm.
Courtesy University of Manitoba

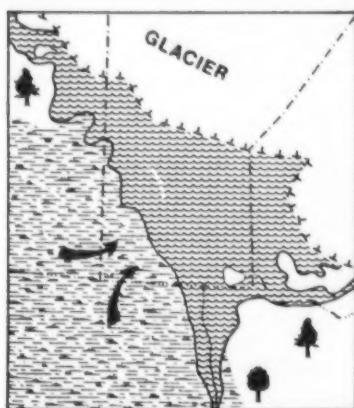
Early Bison Ecology

Since the height of the last Ice Age around 20,000 years ago, the climate and environment of Manitoba have fluctuated dramatically, and these changes have had a profound impact on early plant and animal communities. The glacier that covered Manitoba was as much as four kilometers thick, and the forbidding environment that its surface provided would have discouraged any kind of occupation by either plants or animals. As the ice sheet melted, the waters formed a vast lake that covered most of Manitoba. Due to its higher elevation, much of southwestern Manitoba, comprising the Pembina, Riding, Duck and Porcupine "mountains", were not inundated by Lake Agassiz; but these highlands were held in the grip of the Ice Age climate for some time, allowing only spruce forests to thrive on the upland soils. None of these conditions proved attractive to the herds of grassland-adapted bison that grazed on the southern plains at that time. Not surprisingly, no bison remains dating to this early period have been found in Manitoba.

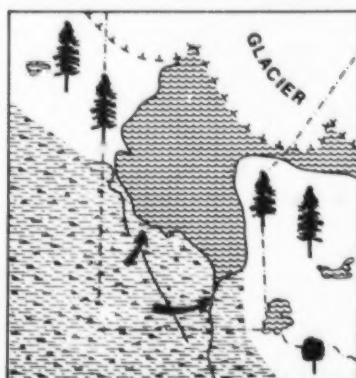
But the warming trend that caused the melting of the ice sheets and the subsequent draining of Lake Agassiz continued, opening up vast new tracts of land and altering the vegetation on others. Perhaps assisted by forest fires, the upland spruce forests rapidly gave way to grasslands, while the recently emergent floor of Lake Agassiz almost immediately became transformed into prairie. Whereas before, there had been only a small amount of open (and ill-suited) landscape, there now existed expansive grasslands devoid of other grass-eating herbivores or human hunters to prey upon them. The fossil evidence for an abrupt occupation of southern Manitoba by ancient bison is dramatic indeed.



From the time the glacier "retreated" from southwestern Manitoba until about 8000 BC, the ice- and lake-free portions of the province were covered by a spruce-dominated forest that probably held little attraction for bison.



By 8000 BC, the changeover from boreal forest to grassland had attracted a sizeable bison population to southwestern Manitoba.



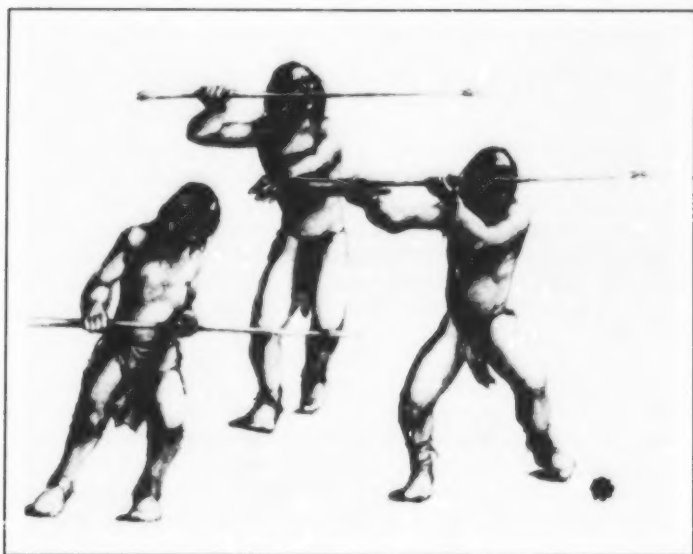
As Lake Agassiz gradually disappeared and grassland expanded across its drained basin, the bison expanded their range into the newly-opened landscape.

Bison Hunting in Early Manitoba

The warming and drying climatic trend that caused Manitoba to become prime "buffalo pasture" shortly before 8000 BC had somewhat more negative consequences in the already arid regions to the south. Water shortages and a deterioration in the quality of the range for grazing induced bison to leave, just as it did the early hunters who followed them throughout the course of their migrations. Here in Manitoba, people found abundant water, wood for their fires, shelter from the winter winds and, most importantly, abundant herds of the bison around which much of their workaday world and their ceremonial lives revolved.

Between 8000 and 3000 BC, conditions were much warmer and drier than they are today. As a consequence, grasslands extended much further to the north and east than is presently the case. For that reason, the range of the now-extinct species of bison extended further in both directions than it does for the modern form—into areas that are forested today. An ancient campsite in the forests of eastern Manitoba provides us with an unparalleled example of a hunt that took place around 6000 BC. A small band of hunters had travelled to the bison wintering ground near the edge of the forest in the fall of the year. Experience had taught them that in order to reach the shelter of the forest, bison habitually crossed the river at a narrowing in its course. Lying in wait on the far side, the hunters sprang from cover as the exhausted animals emerged from the water and became mired in the deep clay of the riverbank. In the course of a single day, a few families could dispatch a sufficient number of animals to provide them with meat for the oncoming winter. The hides could be used as coverings for their shelters, or with leather from which to fashion clothing and footwear.

With the end of the dry climatic phase at approximately 3000 BC, vegetation zones shifted to locations more similar to those of modern times. Accordingly, bison no longer travelled as far to the north as they had previously. Bison remained the dietary mainstay for people who hunted them with improved weapons. Principal among these was the "atlatl", or throwing board. The atlatl is simply a stick with a handle at one end and, at the other, a hook for the butt of a spear. The spear lay parallel to the atlatl in the resting position and was released when the throwing board was brought forward in a continuous throwing motion. Acting as an extension of the arm, it lent additional force and surprising accuracy to the projectile.



The now-extinct forms of bison were hunted with spears (top), lances (left) and darts with the aid of the atlatl (right). The latter was the most sophisticated weapon of the three; the bow and arrow had not yet made its appearance.

Extinction of the Early Forms of Bison

The long drawn-out period of warmth and dryness of the post-glacial period had left its mark. Climatic change throughout much of central North America proved fatal to the large Ice Age animals, many of which were replaced over time by smaller, more "energy-efficient" species. For the bison, environmental conditions favoured the survival of smaller offspring that could better withstand occasional shortages of food and water. With the added pressure of more hunters with improved weapons and hunting techniques, the larger, slower bison could not survive. By 2500 BC, all of the bison living in Manitoba were of the smaller modern species.

REFERENCES

BUCHNER, A.P.

- 1984 Investigations at the Sinnock Site, 1980 and 1982. *Department of Culture, Heritage and Recreation, Historic Resources Branch, Papers in Manitoba Archaeology, Final Report No. 17.*

HAY, O.P.

- 1924 The Pleistocene of the Middle Region of North America and Its Vertebrated Animals. *Carnegie Publication No. 322A.* Washington.

McDONALD, J.N.

- 1981 *North American Bison: Their Classification and Evolution.* University of California Press. Los Angeles.

NIELSEN, E., E.M. GRYBA AND M. WILSON

- 1984 Bison Remains from a Lake Agassiz Spit Complex in the Swan River Valley, Manitoba: Depositional Environment and Paleoecological Implications. *Canadian Journal of Earth Sciences*, Vol. 21, No. 7, pp. 829-842. Ottawa.

PETTIPAS, L.

- 1971 Roaring River Relic. *Zoolog*, Vol. 12, No. 1, pp. 8-10. Winnipeg.

PETTIPAS, L. AND A.P. BUCHNER

- 1983 Paleo-Indian Prehistory of the Glacial Lake Agassiz Region in Manitoba. In "Glacial Lake Agassiz", ed. by J. Teller, pp. 421-451. *Geological Association of Canada Special Paper 26.* University of Toronto Press. Toronto.

SKINNER, M. AND O. KAISEN

- 1947 The Fossil Bison of Alaska and Preliminary Revision of the Genus. *American Museum of Natural History Bulletin* Vol. 89, pp. 123-256. New York.

Suggestions for Further Reading

In addition to the works listed above, there are several others that contain detailed information and discussion on the history of now-extinct bison in North America. These include two excellent articles by R.D. Guthrie entitled "Bison Evolution and Zoography in North America during the Pleistocene", which appears in *The Quarterly Review of Biology*, Vol. 45, No. 1, pp. 1-15, 1970 and "Bison and Man in North America", published in the *Canadian Journal of Anthropology*, Vol. 1, No. 1, pp. 55-73, 1980. Also recommended is "Archaeological Kill Site Populations and the Holocene Evolution of the Genus *Bison*", *Plains Anthropologist*, Vol. 23, No. 82, pp. 9-22, 1978, by Michael Wilson.